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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,162	06/30/2006	Stefan Morgenstern	5038.1030	8326
23280 7590 06/23/2010 Davidson, Davidson & Kappel, LLC 485 7th Avenue 14th Floor New York, NY 10018				
EXAMINER				
PRAGER, JESSE M				
ART UNIT		PAPER NUMBER		
3745				
MAIL DATE		DELIVERY MODE		
06/23/2010		PAPER		

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/585,162  
Filing Date: June 30, 2006  
Appellant(s): MORGENSTERN ET AL.

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William Gehris  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 5/27/2010 appealing from the Office action mailed 10/7/2009.

**1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

**WITHDRAWN REJECTIONS**

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner.

Whether claim 21 should have been rejected under 35 U.S.C. 103(a) as being unpatentable over Hayton et al. (US Patent 6,041,590) in view of Jourdain et al. (US Patent 5,069,034) and in further view of Tanrikut et al. (US Patent 4,361,010).

#### **(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

#### **(8) Evidence Relied Upon**

6041590	Hayton et al.	3-2000
4361010	Tanrikut et al.	11-1982
5069034	Jourdain et al.	12-1991
4,832,568	Roth	5-1989
2002/0197153	Rogers	6-2001

#### **9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 11-17, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayton et al. (US Patent 6,041,590, herein Hayton) in view of Jourdain et al. (US Patent 5,069,034, herein Jourdain) and in further view of Tanrikut et al. (US Patent 4,361,010, herein Tanrikut).

In regards to claim 11, Hayton discloses a device (Fig. 3) for suspending gas channel elements on a housing of a gas turbine, comprising a plurality of first plate-

shaped elements (23) connected to a plurality of second plate shaped elements (28, 29), the first plate-shaped elements and the second plate-shaped elements being connected to one another only by web like elements (22, 24), each web-like element extending to the first and second plate shaped elements to which it is connected and forming a crenelated profile extending in the circumferential direction of the housing.

In regards to claim 11, Hayton does not disclose web-like elements extending approximately perpendicularly to the first and second plate elements to which it is connected, and a length of the housing in the circumferential direction being greater, by a multiple greater than one, than a length of the web-like element in an axial direction.

Jouridan discloses first (8a) and second plates (8b) connected by web elements (8) with the circumferential direction being greater than the width (Fig. 5).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the Hayton device such that the length in the circumferential direction is greater than the length in the axial direction, as taught by Jouridan, in order to reduce material and cost of manufacturing the device.

In regards to claim 11, Hayton does not disclose each web-like element extending in the approximately perpendicularly to the first and second plate shaped elements to which it is connected.

Taunrikut discloses each web-like element extending in the perpendicularly to the first and second plate shaped elements to which it is connected (Fig. 5).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to further modify the Hayton device so each web-like element

extending in the approximately perpendicularly to the first and second plate shaped elements to which it is connected, as taught by Taunrikut because this arrangement enables parallel and counter flow cooling which substantially reduces axial and radial temperature gradient over the panel (abstract).

Additionally, Hayton teaches the use of web-like elements extending at an angle relative to the first and second plate shaped elements to which it is connected. Hayton does not teach that the specific angle is approximately perpendicular.

Since applicant has not disclosed that having the web-like elements extend perpendicularly solves any stated problem or is for any particular purpose above the fact that the approximately perpendicularly arrangement reduces stresses associated with thermal expansion and it appears that the web-like elements of Hayton would perform equally well with extending approximately perpendicularly as claimed by applicant, it would have been an obvious matter of design choice to modify the angle that the web-like elements extend by utilizing the approximately perpendicular arrangement between web-like element and first and second plates as claimed for the purpose of reducing stresses associated with thermal expansion.

In regards to claim 12, the modified device of Hayton comprises the first plate-shaped elements are connected with the housing (14) of the gas turbine and the second plate-shaped elements are connected with at least one channel element (16).

In regards to claim 13, the modified device of Hayton comprises one of the second plate-shaped elements (23) is positioned between two adjacent ones of the first plate-shaped elements (28, 29) such that one end of the said one of the second plate-

shaped elements is connected to one of the two adjacent first plate-shaped elements via one of the web-like elements, and an opposing end of the one of the second plate-shaped elements is connected to the other one of the two adjacent first plate-shaped elements via another one of the web-like elements.

In regards to claim 14, the modified device of Hayton comprises the web-like elements extend axially over an entire width of the first plate-shaped elements and/or the second plate-shaped elements.

In regards to claim 15, the modified device of Hayton comprises the device is designed as a closed ring having a crenelated profile.

In regards to claim 16, the modified device of Hayton comprises the device is designed as a ring segment having a crenelated profile.

In regards to claim 17, the modified device of Hayton comprises the device includes a plurality of the ring segments joined together (Col. 5 lines 1-4).

In regards to claims 19 and 20, Hayton discloses the modified device of Hayton comprises each of the plate element (23) includes a bore hole (41), and each bolt-like mounting element (26) inserted through said bore holes on a housing side of the first plate-shaped elements, thereby connecting the first plate elements to the housing of the turbine.

2. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayton in view of Jourdain, in further view of Tanrikut as applied above to claims 16, and in further view of Roth et al. (US Patent 4,832,568, herein Roth).

In regards to claim 18, the modified device of Hayton comprises the ring segments.

The modified device of Hayton does not comprise four first plate-shaped elements and three second plate-shaped elements being, said three of the second plate shaped elements being connected to four the first plate-shaped elements via six of the web-like elements.

Roth discloses a ring segment (21) with four first-plate elements (on bottom), three second-plate elements (on top), said three of the second plate shaped elements being connected to four the first plate-shaped elements via six connecting web elements (Fig. 3).

Since applicant has not disclosed that having a particular number of first and second plates and connecting web elements solves any stated problem or is for any particular purpose above the fact that the structure forms a thermally compliant segmented ring and it appears that the first, and second plates and web-like elements of Hayton would perform equally well with the numbers as claimed by applicant and disclosed by Roth, it would have been an obvious matter of design choice to modify the number of web-like elements and first and second plates as claimed for the purpose of forming a thermal compliant segmented ring.

3. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayton in view of Jourdain, in further view of Tanrikut as applied above to claim 11, and in further view of Rogers (US Patent Application Publication 2002/0197153).



The modified device of Hayton discloses at least one of the second plate-shaped elements with a thermally compliant connection from the gas channel to the second plate for circumferential adjustment of a gas channel element.

Hayton does not disclose the second plate-shaped element has a guide pin.

Rogers discloses a thermally compliant connection with a guide pin (53) for circumferential centering.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Hayton's device such that the guide pin is on the surface of the second plate-shaped element because the combination of elements known in the prior art would have predictable results, and the connection taught by Rogers because it transmits circumferential loading to the engine casing and isolates radial loading from the engine casing caused by thermal growth changes of the vane segments (abstract).

#### **(10) Response to Argument**

##### **I. Rejections under 35 U.S.C. 103(a)**

In response to applicant's argument that one of skill in the art never would have modified Hayton's A-frame construction to provide perpendicular walls, whether in view of Tanrikut or alone (page 5), the examiner respectfully disagrees. Obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d

1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007).

In this case, Tanrikut teaches a casing structure with perpendicular web-like elements extending in a circumferential direction of the housing, and motivates providing the casing structure to enable parallel and counter flow cooling which substantially reduces axial and radial temperature gradient over the panel and reduces the overall temperature of the entire liner. Additionally, obviousness is supported by knowledge generally available to one of ordinary skill in the art. It would have been an obvious matter of design choice for engineers in the art of casing for gas turbines to modify the disclosed angle of web-like elements to be approximately perpendicular to reduce the stresses in the casing structure. Casing structures exposed to high gradients with web-like elements having larger angles experience higher bending stresses in the web-like element and there will be an increased likelihood of buckling.

In response to applicant's argument that Hayton already establishes a "differential thermal expansion between the hottest and coldest parts of the panels is totally eliminated", and since there is no substantial temperature gradient over the panels, there is simply no need or desire to modify Hayton, the examiner respectfully disagrees. Although, Hayton describes that in a preferred embodiment the incorporation of the cutouts 40 in between the axial attachments 41, and 43 at the casing lowers the differential thermal expansion of the panels, there would still be differential thermal gradient caused by the high temperature gases impinging on skin panels 16 and 18. Hayton cut-outs (40) in the vicinity of the casing 14 reduces the formations of localized cold spots on the panel, but there is still a need to reduce the thermal gradient in between the casing 14 and skin panels 14 and 16.

In response to applicant's argument that the perpendicular arrangement further provides "a very direct flow of force", the examiner maintains that modifying the angle of the web-like elements appears to be a design choice to one having ordinary skill in the art to reduce stress in the casing. Furthermore, par.19 describes that the crenelated contour, not specifically the perpendicular angle of the web-like element, permits "a very direct flow of force". Applicant has not identified the importance associated with having the web-like elements be approximately perpendicular, and general knowledge available to one having ordinary skill in the art renders having the web-like elements extending perpendicularly as obvious.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/JESSE PRAGER/

Examiner, Art Unit 3745

Conferees:

/Edward K. Look/  
Supervisory Patent Examiner, Art Unit 3745

/Thomas E. Denion/  
Supervisory Patent Examiner, Art Unit 3748